

OSTEOMYELITIS OF THE ISCHIUM

A Case Presentation

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INTRODUCTION

In this case presentation I discuss an interesting example of osteomyelitis in an otherwise fit 21 year old male professional dancer who presented with a three week history of right buttock stiffness. The pathogenesis, typical clinical presentation and treatment of this condition are discussed.

PATHOGENESIS AND CLINICAL FEATURES

There are four major pathways by which suppurative osteomyelitis invades bone (1).

1. Haematogenous spread of infection.
2. Spread from a contiguous source of infection.
3. Direct implantation of infection.
4. Post operative infection.

“The clinical features of suppurative osteomyelitis vary significantly among infants, young children, and adults. Infants and young patients present with an acute process characterized by fever, chills, pain, and swelling over the affected body part. There is frequently an extensive loss of limb function. Elevated white blood cell counts with a shift to the left and an increase in erythrocyte sedimentation rate frequently occur relatively early. The signs and symptoms in an adult patient are often varied and reflect a more chronic or insidious process. The usual mode of presentation is fever, malaise, oedema, erythema, and pain over the affected area. There is frequently an extensive loss of limb function.” (1).

Suppurative osteomyelitis is more commonly found in the immunosuppressed patient, A.I.D.S patients, alcoholics, new born, diabetics, those with disseminated malignancy and otherwise debilitated patients (1,2,3).

Haematogenous osteomyelitis begins in the bone with implantation of the offending organism. There does not have to be a portal of entry, or cuts, staphylococcus is present fleetingly in many patients but is cleared spontaneously. In this case it settled in the ischium.

The involvement of the periosteal and subperiosteal areas causes a loss of blood supply to the cortical bone, rendering it necrotic. Cortical and medullary infarcts

result in the formation of an island of necrotic bone, a sequestrum. An inflammatory exudate forms at the margin of the infarct. The occurrence of a sinus which may develop is referred to as a “cloaca”. The function of these defects is to allow the continued discharge of inflammatory products from the bone. They are most frequently associated with chronic osteomyelitis. A rare but significant complication of the cloaca is neoplastic change. This malignant transformation is only found in chronic osteomyelitis and maybe referred to as a “Marjolin’s” ulcer and there is usually a 20 - 30 year latent period (1).

CASE REPORT

Keith is a previously healthy 21 year old male professional dancer who attended on a Monday with a three week history of slight stiffness in the right buttock. He attributed this stiffness to a recent increase in dancing, in preparation for a competition. Despite two weeks of rest from dancing, there had been no resolution of the symptoms.

Examination was unremarkable, his general health excellent. He was a non smoker and did not take any medications. Straight-leg-raising and Fabere-Partick’s test was full and pain free, neurological examination of the lower extremity was normal and there was no observed asymmetry of the gluteal region. The patient had not experienced any fever or night sweats.

Deep palpation of the right posterior gluteal region, to include the gluteus maximus and piriformis muscles, produced a slight localized discomfort for the patient.

A preliminary diagnosis of an over use strain to the posterior gluteal muscles was made in the absence of any other clinical findings.

The patient was treated with light soft tissue massage, to the piriformis and gluteal muscles, lumbar side lying manipulation, and he was prescribed a home treatment regime of stretching and ice. The patient was asked to return in three days for review.

On review his straight-leg-raising and Fabere-Patrick’s test were still full and pain free. Hip flexion was complete however, a slight stiffness was noted in the posterior gluteal region. Stiffness on extreme hip flexion was unusual for this patient as his flexibility was normally such that he could do the splits without stiffness. On testing he could not completely do the

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splits and at maximum stretch was approximately five centimeters off horizontal.

When the patient was examined from behind and standing with his gluteal regions exposed, a soft tissue asymmetry was noted. The right gluteus maximus appeared swollen. The patient did not describe any fever or sweats as was not systemically unwell.

The patient was referred for lumbopelvic radiography.

PLAIN FILM XRAY REPORT

"A 1.5cm lytic lesion is visible within the right ischium. It has a sclerotic margin except laterally where it appears deficient. There is some surrounding sclerosis. The appearances are atypical for a simple cyst particularly with the cortical deficiency and other lesions such as an osteoid osteoma seem unlikely, but both a limited C.T. Scan of the region and a Nuclear Medicine Bone Scan are recommended. The appearances are otherwise unremarkable."

The patient was referred to his local medical officer (LMO) and referred for a C.T. Scan of the involved region. The medical practitioner also prescribed some anti-inflammatory medication and took a blood sample for a Full Blood Examination (FBE) and Erythrocyte Sedimentation Rate (E.S.R.).

LABORATORY TEST RESULTS

Haemoglobin	15.2	(M 13-17.5 g/dl)
White cell count	8.8	(4.0-11.0)
Differential white cell count		
Neutrophils	73%	
Lymphocytes	15%	
Monocytes	10%	
Eosinophils	2%	
Basophils	1%	
Platelets	282	(150-450)
E.S.R	21	(M<20 mm/hr)

I discussed this case with a surgeon who has a special interest in bone tumours and infection. His concern was that the lesion I described may be an infection and that the swelling may be an abscess. The surgeon requested the patient should be seen as soon as possible and an appointment was made for the same day.

I made contact with the patient's LMO and discussed my earlier conversation with the surgeon, and he assisted with my request for a surgical opinion and wrote an appropriate referral.

C.T. ISCHIUM REPORT

"Non contrast axial scans were performed from the roof of the acetabulum to the ischial tuberosity. These characterised the lytic lesion in the right ischium as having a cortical margin that is deficient laterally where there is a small fragment of bone. A small tract is running from the lesion posterosuperiorly into the medullary portion of the ischium which appears generally sclerotic. There is no evidence of periosteal reaction, but the soft tissues surrounding the lesion are hypodense in nature consistent with inflammation and there is evidence of wasting of the right gluteus maximus. This is a longstanding lesion and possibly represents a small area of chronic osteomyelitis with a small fragment of bone representing a sequestrum, causing inflammation of the adjacent soft tissues".

INITIAL SURGICAL OPINION

SUMMARISED AS FOLLOWS:

No soft tissue asymmetry or swelling was observed. There was a slight decrease in hip flexion.

Review of the x rays revealed a discrepancy between the probable age of the x-ray change and duration of symptoms however, the x-ray abnormality should be further investigated with a bone scan and possibly M.R.I. scan.

NUCLEAR BONE SCAN RESULTS

"Findings:

In the initial flow and blood pool images there is increased vascularity identified posterior to the right hip in the buttock region. This does not correspond to the right ischium.

In the delayed bone scan images there is increased uptake in the right ischium. As this is not associated with increased vascularity focally at this site, this is unlikely to represent osteomyelitis, fracture or osteoid osteoma. Benign bone lesions can have this scan appearance.

Slightly increased tracer uptake over the posterior right hip is noted, at the site of increased vascularity. The increased bone uptake would be entirely consistent with vascularity changes in the soft tissues, and do not clearly indicate any underlying right hip or femur pathology.

Conclusion:

Increased uptake without associated increased vascularity in the right ischium is present, it is

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unlikely to represent infection, fracture or osteoid osteoma.

Increased vascularity in the soft tissues of the posterior hip joint is noted, with associated mild increase in hip joint bone uptake”.

The patient presented to my clinic for recommencement of his rehabilitation, the day after his bone scan. The radiologist had discussed the bone scan results with the patient suggesting the lesion was necrotic and there was no cause for alarm.

The soft tissue swelling was again noted in the right gluteal region. The patient was given a series of exercises to perform, but instructed to begin these only after a further consultation with his surgeon. The patient was given a written referral by me asking the surgeon to address this swelling. No soft tissue massage or manipulation was administered, due to the presence of the soft tissue swelling.

SURGICAL OPINION, SECOND VISIT

SUMMARIZED AS FOLLOWS:

Upon examination there was an obvious swelling in the region of the gluteal fold.

Because of this another C.T. scan was performed.

SECOND C.T. REPORT

“This examination was performed both before and after contrast enhancement a localized view of the right buttock was performed. The examination demonstrated swelling of the muscle rising from the upper femur and from the ischium which is probably adductor longus and extending down this muscle inferiorly. After contrast injection there is seen to be enhancement of this muscle mainly around its margins and more centrally there was seen to be areas of low density which were probably confluent. They are also seen to be extremely closely related to the defect in the ischial tuberosity on the right side and although quite extensive the possibility that this is a muscular abscess rather than a sarcoma would need to be excluded”.

In the light of these new findings the surgeon discussed the case with the radiologist and felt a diagnosis of an abscess most likely, however if this is the case it is unusual that the patient is not systemically unwell.

Consequently arrangements for Magnetic Resonance Imaging (M.R.I) and a repeat F.B.E. were made, to determine the extent of the lesion prior to surgery,

with the earliest available M.R.I. appointment being five days away. After the M.R.I., appropriate exploratory surgery would be undertaken the following morning. The patient was told to contact the surgeon if the pain worsened or if he felt systemically unwell.

SECOND LABORATORY TEST RESULTS

Haemoglobin	14.3	(13.0-18.0 g/dl)
Leucocytes	13.2	(4.0-11.0)
Neutrophils band	1%	0.1 (0.0-0.5)
Neutrophils mature	79%	10.4 (2.0-7.5)
Lymphocytes	12%	1.6 (1.0-4.0)
Monocytes	7%	0.9 (0.2-0.8)
Eosinophils	1%	0.1 (0.04-0.4)
E.S.R.	75	(1-10mm)
Serum c-reactive protein	207	(<10mg/l)

In the light of the above results with the elevated E.S.R from 21 to 75 and the increase in total leucocytes from 8.8 to 13.2 with a shift to left, along with a high c-reactive protein 207 the patient was contacted. He had begun to become systemically unwell with fever and sweats. He was advised to come in for immediate surgical attention.

SURGICAL OPINION AND PROCEDURE

“Operative diagnosis: Abscess of the right ischium tracking into the soft tissues posterior to the femur.

Operation: Drainage

Operation: The patient was placed in the lateral position on the operating table and a posterior approach to the hip made.

Pus was drained from the region of the piriformis and quadratus femoris and specimens sent to microbiology and histopathology. The sinus tract was followed down to the ischium and a hole within the ischium was then curetted and biopsied and sent to microbiology.

Two 14 gauge Redivac drain tubes were left in situ, one tracking down to the ischium and the other within the main part of the abscess.

The wound was then sutured in layers with staples to the skin”.

The patient was prescribed Keflex (an antibiotic).

The patient has made a complete and full recovery, left with a residual 15cm scar on the right posterior gluteal region.

DISCUSSION

This is an interesting case of osteomyelitis because there was no complicating disease such as diabetes, corticosteroid therapy, intravenous drug usage, immunosuppression, malignancy, recent surgery, some other infection or the characteristic traumas of childhood (1,2).

The fact there was no fever, malaise, erythema, pain or extensive loss of limb function also brought more confusion to this case.

The duplication of the C.T. scan in the light of an accurate bone scan consistent with a chronic osteomyelitic lesion, mis-interpreted by the radiologist, was also confusing as chronic osteomyelitis often has a characteristic necrotic component, and will demonstrate a decrease in the vascular phase of the bone scan as with cortical and medullary infarcts.

Post-surgical retrospective questioning of the patient appears to shed some further light on the chronic clinical course of this case. A previous episode of acute hip pain could be recalled. This occurred approximately nine years previously and resolved spontaneously. It is possible that this previous hip pain may have been the beginning of this chronic lesion, with the recent increase in physical preparation for competition accounting for the acute exacerbation of this latent lesion.

"Most pain in the buttock has a lumbar origin. Lesions in the buttock itself, although uncommon, are often serious, some often requiring urgent treatment. There immediate clinical recognition is therefore important"(4).

Cyriax (4) states that major lesions in the buttock are often associated with the "sign of the buttock" and describes this sign as being present when pain and limited movement are elicited on both passive straight-leg-raising and hip flexion, with the knee flexed, implicating a lesion in the buttock. Forward trunk flexion and resisted hip movements are also usually painful and the affected buttock may feel larger on palpation. Cyriax lists a number of conditions which may give rise to this sign which include septic bursitis, fracture, neoplasm and osteomyelitis.

CONCLUSION

The initial consultation with this patient was unremarkable.

The second consultation when the "sign of the buttock" emerged, along with the gluteal swelling, was

critical, eventually leading to the diagnosis of this lesion. Although the loss of limb function was slight, when compared to the average male, a decrease in passive hip flexion of 10 percent for this patient, being a professional dancer, was extreme loss of function.

This case highlights a number of very interesting points. The presence of the soft tissue swelling was a critical observation, which drew my attention to the more sinister conditions which occur at the hip. The presence of this swelling could only be seen when the patients' gluteals were exposed, the fact that he was extremely athletic and very lean clearly defined this asymmetry. This swelling may have been very difficult to see if the patient was overweight. Initially the surgeon did not notice the swelling and when prompted by my letter, re-addressed the region. The misinterpretation of the bone scan by the radiologist, concluding that the lesion was not osteomyelitis was also confusing as was the absence of systemic symptoms. Chronic osteomyelitis can demonstrate a cold spot, due to necrosis.

The early diagnosis and intervention determines the overall outcome of osteomyelitis. The absence of trauma, illness and extensive loss of limb function frequently delays the diagnosis of musculo-skeletal disorders especially that of osteomyelitis. The extent of morbidity is usually directly related to the time delay of treatment as with the case of vertebral osteomyelitis, months in delay usually result in multiple segmental ankylosis, fusion and morbidity(5).

Although osteomyelitis is not a common condition seen in general chiropractic practice this case highlights the need for both a careful and detailed history and physical examination as well as the fact that initial diagnostic testing may be misleading.

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